

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

Claim 1. (Canceled)

Claim 2. (Previously amended): An isolated polynucleotide molecule comprising a nucleotide sequence encoding the polypeptide sequence of SEQ ID NO:2.

Claim 3. (Original): The isolated polynucleotide molecule of claim 2 comprising a nucleic acid having the sequence of SEQ ID NO:1.

Claim 4. (Original): A vector comprising the isolated polynucleotide molecule of claim 2.

Claim 5. (Original): A host cell comprising the vector of claim 4.

Claim 6. (Currently amended): A method for transforming a *Corynebacterium* species host cell comprising:

- (a) —— transforming a *Corynebacterium* species host cell with ~~the~~ an isolated polynucleotide molecule of claim 2 comprising a nucleotide sequence encoding the polypeptide of SEQ ID NO:2, wherein and said isolated polynucleotide molecule is integrated into said host cell's chromosome, and
- (b) —— selecting a transformed host cell.

Claim 7. (Previously amended): The method of claim 6 further comprising screening for said transformed polynucleotide molecule.

Claim 8. (Currently amended): The method of claim 6 wherein said host cell possesses expresses at least one of the following activities:

- (a) aspartate-semialdehyde dehydrogenase activity;
- (b) dihydrodipicolinate synthase activity;
- (c) dihydrodipicolinate reductase activity;
- (d) diaminopimelate dehydrogenase activity; and
- (e) diaminopimelate decarboxylase activity.

Claim 9. (Previously amended): The method of claim 8 further comprising screening for said activity.

Claim 10. (Previously amended): The method of claim 6, wherein said isolated polynucleotide molecule further comprises at least one of the following:

- (a) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;
- (b) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;
- (c) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO:8;

- (d) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO:10;
- (e) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID NO:21;
- (f) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID NO:14; and
- (g) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO:16.

Claim 11. (Original): The method of claim 6, wherein said isolated polynucleotide molecule further comprises the following:

- (a) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;
- (b) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;
- (c) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO:8; and
- (d) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO:16.

Claim 12. (Original): The method of claim 6, wherein said isolated polynucleotide molecule further comprises the following:

- (a) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;
- (b) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;
- (c) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO:8;
- (d) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO:10; and
- (e) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO:16.

Claim 13. (Original): The method of claim 6, wherein said isolated polynucleotide molecule further comprises the following:

- (a) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;
- (b) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;
- (c) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO:8;
- (d) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO:10;
- (e) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID NO:21; and

(f) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID
NO:16.

Claim 14. (Original): The method of claim 6, wherein said isolated polynucleotide molecule
further comprises the following:

(a) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID
NO:4;

(b) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID
NO:6;

(c) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID
NO:8;

(d) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID
NO:10;

(e) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID
NO:14; and

(f) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID
NO:16.

Claim 15. (Original): The method of claim 6 further comprising:

- (a) growing said transformed host cell in a medium; and
- (b) purifying an amino acid produced by said transformed host cell.

Claim 16. (Previously amended): An isolated polynucleotide molecule comprising:

- (a) the polynucleotide molecule of claim 2; and
- (b) at least one additional *Corynebacterium* species lysine pathway gene selected from the group consisting of:
 - (i) a nucleic acid molecule encoding the *asd* polypeptide of SEQ ID NO:4;
 - (ii) a nucleic acid molecule encoding the *dapA* polypeptide of SEQ ID NO:6;
 - (iii) a nucleic acid molecule encoding the *dapB* polypeptide of SEQ ID NO:8;
 - (iv) a nucleic acid molecule encoding the *ddh* polypeptide of SEQ ID NO:10;
 - (v) a nucleic acid molecule encoding the *lysA* polypeptide of SEQ ID NO:21;
 - (vi) a nucleic acid molecule encoding the *lysA* polypeptide of SEQ ID NO:14; and
 - (vii) a nucleic acid molecule encoding the *ORF2* polypeptide of SEQ ID NO:16.

Claim 17. (Canceled)

Claim 18. (Original): An isolated polynucleotide molecule comprising:

- (a) the polynucleotide molecule of claim 2;

- (b) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;
- (c) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;
- (d) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO:8; and
- (e) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO:16.

Claim 19. (Original): An isolated polynucleotide molecule comprising:

- (a) the polynucleotide molecule of claim 2;
- (b) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;
- (c) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO: 6;
- (d) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO:8;
- (e) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO:10; and
- (f) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO:16.

Claim 20. (Original): An isolated polynucleotide molecule comprising:

- (a) the polynucleotide molecule of claim 2;
- (b) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;
- (c) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;
- (d) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO:8;
- (e) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO:10;
- (f) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID NO:21; and
- (g) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO:16.

Claim 21. (Original): An isolated polynucleotide molecule comprising:

- (a) the polynucleotide molecule of claim 2;
- (b) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;
- (c) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;
- (d) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO:8;

- (e) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO:10;
- (f) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID NO:14; and
- (g) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO:16.

Claim 22. (Original): The isolated polynucleotide molecule of claim 18 comprising pK184-KDAB.

Claim 23. (Original): The isolated polynucleotide molecule of claim 20 comprising pD11-KDABH'L.

Claim 24. (Original): The isolated polynucleotide molecule of claim 21 comprising pD2-KDABHL.

Claim 25. (Original): A vector comprising the polynucleotide molecule of claim 16.

Claim 26. (Original): A host cell comprising the vector of claim 25.

Claim 27. (Previously amended): The host cell of claim 26 wherein said host cell is a *Brevibacterium* selected from the group consisting of *Brevibacterium flavum* NRRL-B30218, *Brevibacterium flavum* NRRL-B30219, *Brevibacterium lactofermentum*

NRRL-B30220, *Brevibacterium lactofermentum* NRRL-B30221, *Brevibacterium lactofermentum* NRRL-B30222, *Brevibacterium flavum* NRRL-B30234 and *Brevibacterium lactofermentum* NRRL-B30235.

Claim 28. (Original): The host cell of claim 26 wherein said host cell is *Escherichia coli* DH5 α MCR NRRL-B30228.

Claim 29. (Original): The host cell of claim 26 wherein said host cell is a *C. glutamicum* selected from the group consisting of *C. glutamicum* NRRL-B30236 and *C. glutamicum* NRRL-B30237.

Claims 30-60 (canceled)

Claim 61. (Previously amended): The isolated polynucleotide molecule of claim 2 further comprising a promoter sequence where said promoter sequence has at least 95% sequence identity to SEQ ID NO:17, wherein said promoter sequence controls expression of said polynucleotide.

Claim 62. (Original): The polynucleotide of claim 61 where said promoter sequence has the nucleotide sequence of SEQ ID NO:17.

Claim 63. (Canceled)

Claim 64. (Original): A vector comprising the isolated polynucleotide of claim 61.

Claim 65. (Original): A host cell comprising the vector of claim 64.

Claim 66. (Original): The host cell of claim 65 wherein said host cell is NRRL B30359.

Claim 67. (Currently amended): A method for transforming a *Corynebacterium* species host cell comprising:

- (a) transforming a *Corynebacterium* species host cell with the polynucleotide molecule of claim 61, and
- (b) selecting a transformed host cell.

Claim 68. (Previously added): The method of claim 8 wherein said activity is aspartate-semialdehyde dehydrogenase activity.

Claim 69. (Previously added): The method of claim 8 wherein said activity is dihydrodipicolinate synthase activity.

Claim 70. (Previously added): The method of claim 8 wherein said activity is dihydrodipicolinate reductase activity.

Claim 71. (Previously added): The method of claim 8 wherein said activity is diaminopimelate dehydrogenase activity.

Claim 72. (Previously added): The method of claim 8 wherein said activity is diaminopimelate decarboxylase activity.

Claim 73. (Previously added): The isolated polynucleotide molecule of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is the *asd* polypeptide of SEQ ID NO:4.

Claim 74. (Previously added): The isolated polynucleotide molecule of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is the *dapA* polypeptide of SEQ ID NO:6.

Claim 75. (Previously added): The isolated polynucleotide molecule of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is the *dapB* polypeptide of SEQ ID NO:8.

Claim 76. (Previously added): The isolated polynucleotide molecule of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is the *ddh* polypeptide of SEQ ID NO:10.

Claim 77. (Previously added): The isolated polynucleotide molecule of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is the *lysA* polypeptide of SEQ ID NO:21.

Claim 78. (Previously added): The isolated polynucleotide molecule of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is the *lysA* polypeptide of SEQ ID NO:14.

Claim 79. (Previously added): The isolated polynucleotide molecule of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is the *ORF2* polypeptide of SEQ ID NO:16.

Claim 80 (New): The method of claim 68, wherein said aspartate-semialdehyde dehydrogenase activity is encoded by the *asd* polypeptide of SEQ ID NO:4.

Claim 81 (New): The method of claim 69, wherein said dihydrodipicolinate synthase activity is encoded by the *dapA* polypeptide of SEQ ID NO:6.

Claim 82 (New): The method of claim 70, wherein said dihydrodipicolinate reductase activity is encoded by the *dapB* polypeptide of SEQ ID NO:8.

Claim 83 (New): The method of claim 71, wherein said diaminopimelate dehydrogenase activity is encoded by the *ddh* polypeptide of SEQ ID NO:10.

Claim 84 (New): The method of claim 72, wherein said diaminopimelate decarboxylase activity is encoded by the *lysA* polypeptide of SEQ ID NO:21.

Claim 85 (New): The method of claim 72, wherein said diaminopimelate decarboxylase activity is encoded by the *lysA* polypeptide of SEQ ID NO:14.